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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,973	12/27/2001	Takashi Hattori	T&A-109	1785

7590

05/30/2003

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EXAMINER

ROSASCO, STEPHEN D

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,973

Applicant(s)

HATTORI ET AL.

Examiner

Stephen Rosasco

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1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

Detailed Action

The disclosure is objected to because of the following informalities: there are numerous spelling and grammatical errors present, e.g., page 2, second paragraph, line 2, "more remarkably", lines 7, "manufacturing cost comes to a very large problem"; page 4, third paragraph, "further fine a circuit"; page 9, bottom second paragraph, "reforming the entire of the photomask from the beginning"; page 40, third line from bottom, "comes to foreign matter defect".

Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Zampini (US 20020051928 A1) or Gonsalves (US 20020182541 A1).

The claimed invention is directed to a mask and a method of making a mask comprising a shade pattern containing at least nanoparticles and a binder, such as carbon in an organic film such as a photoresist film. The applicant discusses the limitations of the prior art in that if a shade pattern of a photomask is constituted of a resist it is impossible to obtain a sufficient shading characteristic against rays having a wavelength larger than 230 nm and therefore to completely function as a shading material.

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Zampini teaches a method for forming a photoresist relief image or an electronic device, comprising the steps of applying a coating layer of a photoresist composition comprising a plurality of core-shell polymeric particles and a photoactive component, wherein the polymeric particles comprise one or more cleavable groups; exposing the photoresist coating layer to patterned activating radiation; and developing the exposed photoresist coating layer to provide a photoresist relief image.

And wherein the core-shell polymeric particles have a mean particle size in the range of from about 1 to about 1000 nm.

Gonsalves teaches a lithographic process wherein the lithographic recording medium comprises the nanocomposite resist comprising: a nanoparticle component; and a polymer component, wherein the nanoparticle component comprises a boride, carbide, silicide, nitride, phosphide, arsenide, oxide, sulfide, selenide, telluride, fluoride, chloride, bromide, iodide, or combinations thereof, wherein the polymer component comprises a polymer that undergoes chain scission upon exposure to electron beam irradiation.

And wherein the nanoparticle component comprises a nanoparticle having an average diameter less than about 2 nanometers.

And wherein the nanoparticle component comprises an oxide of silicon, aluminum, titanium, zirconium, iron, antimony, tin, cerium, barium, manganese, vanadium, chromium, lead, copper, indium, yttrium, zinc, mixed oxides thereof, or combinations thereof.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatakeyama et al. (6,007,969).

The claimed invention is directed to a mask and a method of making a mask comprising a shade pattern containing at least nanoparticles and a binder, such as carbon in an organic film such as a photoresist film. The applicant discusses the limitations of the prior art in that if a shade pattern of a photomask is constituted of a resist it is impossible to obtain a sufficient shading characteristic against rays having a wavelength larger than 230 nm and therefore to completely function as a shading material.

Hatakeyama et al. teach a method of ultra-fine fabrication of a surface of a target object comprising a semiconductor material composed of a group III element and a group V element of the periodic table, said method comprising: dispersing on said surface a plurality of micro-particles such that said micro-particles form shields over first portions of said surface while remaining second portions of said surface remain unshielded; and

radiating an energy beam toward said surface in a direction substantially perpendicular thereto, wherein said energy beam comprises a beam selected from the group consisting of a fast atomic beam, an ion beam, an electron beam, a radiation beam, an atomic beam and a molecular beam such that said energy beam etches said second portions thereof while said micro-particles shield said first portions thereof, thereby forming a fabricated target object including a base having fine structures protruding therefrom.

And wherein said dispersing comprises applying to said surface a solution containing a dispersion of said particles and a solvent.

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And wherein said micro-particles have a range of particle size of 0.1-10 nm and are selected from the group consisting of ferrite particles, zinc particles, cobalt particles and diamond particles.

And wherein said micro-particles have a range of particle size of 100 nm-10 μ m, and are selected from the group consisting of aluminum particles, graphite particles, gold particles and silver particles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Rosasco whose telephone number is (703) 308-4402.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661. Fax (703) 872-9310 Before Finals; 872-9311 After Finals.

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized, cursive script.

S. Rosasco
Primary Examiner
Art Unit 1756

S. Rosasco
5/23/03